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EXAMINER

RUDDOCK, ULA CORINNA

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
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1771

DATE MAILED: 02/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/028,499

Applicant(s)

FU ET AL.

Examiner

Ula C Ruddock

Art Unit

1771

The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/2/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The Examiner has carefully considered Applicant's amendment and accompanying remarks filed November 28, 2003. The 112, 2nd paragraph rejections have been overcome by the present response. It should be noted that the Examiner has added a new rejection over Morgan (US 6,568,310).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 7, 8, 12, 13, 15, 17, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Morgan (US 6,568,310). Morgan discloses lightweight armored panels and doors (abstract). The panel comprises ballistic layers made of woven aramid fibers (col 4, ln 1-2). Film adhesive is used between adjacent layers to connect them together into a unified panel (col 2, ln 56-57). The preferred adhesives are the AF series from 3M Co (col 4, ln 29-31). A preferred adhesive is AF-163-2 OST film adhesive which is an epoxy adhesive (US 4,968,383 @ col 14, ln 52-54). The body material can be made of structural honeycomb or rigid foam (col 3, ln 1-3); the honeycomb can be either an aramid or aluminum honeycomb (col 3, ln 8-11) and the foam can be a polyurethane foam (col 3, ln 35-36). It should be noted that the Examiner is equating the polyurethane foam material to

Art Unit: 1771

the cushioning material of the present invention. The panel comprises face sheets made from phenolic resin impregnated fiberglass woven cloth (col 3, ln 37-38). In Figure 4 of Morgan, it should be noted that the panel comprises two face sheets (reference point 20), which the Examiner is equating to the first and second fiber-reinforced face skin. The panel further comprises a steel mesh layer (col 4, ln 18-19).

Claim Rejections - 35 USC § 102/103

4. Claim 4 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Morgan (US 6,568,310), as shown above.

Although Morgan does not explicitly teach the claimed ballistic resistance, it is reasonable to presume that the ballistic resistance property is inherent to the explosion resistant material of Morgan. Support for said presumption is found in the use of like materials (i.e. high tensile strength fabric, film adhesive material, cushioning material, and first and second fiber-reinforced face skin material). The burden is upon Applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 495. In addition, the presently claimed property of a ballistic resistance not less than level IIIA as set forth in National Institute of Justice Standard 0101.04, would obviously have been present once the product of Morgan is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 1771

6. Claims 2, 3, 5, 6, 9, 10 11, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan (US 6,568,310), as set forth above. Morgan discloses the claimed invention except for the teaching of the claimed area density, rigidity, tensile strength, the number of fabric sheets, panel thickness, density, and face skin thickness. It should be noted that optimizing variables such as area density, rigidity, tensile strength, the number of fabric sheets, panel thickness, density, and face skin thickness are all result effective variables. For example, the higher the tensile strength of the panel, the greater the durability of the panel. The greater the panel and face skin thickness in the composite, the greater the ballistic resistance property of the panel. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the panel have an area density of not less than 1.8 pounds per square foot and not greater than 2.5 pounds per square foot, a panel rigidity of not less than a honeycomb-core structural panel of equivalent thickness, fabric tensile strength not less than 100 pounds per inch of width for every ounce per square yard of fabric weight, 12-33 sheets of the fabric layer, a panel core that has a thickness of 0.25-2 inches, a cushioning material density of 3-8 pounds per cubic feet, and a first and second face thickness of 0.02-0.10 inches, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have optimized the panel's area density, rigidity, tensile strength, number of fabric sheets, panel thickness, density, and face skin thickness,

Art Unit: 1771

motivated by the desire to create an armored panel that is lightweight yet has increased ballistic resistance.

With regard to claim 6, although Morgan does not explicitly teach the claimed ballistic resistance, it is reasonable to presume that the ballistic resistance property is inherent to the armored panel of Morgan. Support for said presumption is found in the use of like materials (i.e. high tensile strength fabric, film adhesive material, cushioning material, and first and second fiber-reinforced face skin material). The burden is upon Applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 495. In addition, the presently claimed property of a ballistic resistance not less than level IIIA as set forth in National Institute of Justice Standard 0101.04, would obviously have been present once the product of Morgan is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

7. Claims 1-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fingerhut et al. (US 6,237,793) in view of Dickson et al. (US 5,851,932). Fingerhut et al. disclose an explosion resistant aircraft cargo container (abstract). Sheets of explosion resistant, high tensile strength material include fibers such as aramid fibers (KEVLAR™ fibers) or polyethylene fibers (SPECTRA™ fibers) and can be in the form of a woven fabric (col 6, ln 45-61). At least one layer of film adhesive helps the bonding of the explosion resistant sheet of material (col 6, ln 63-67). The film adhesive is preferably a thermoplastic polymer such as a thermoplastic ionomer, a polyurethane resin, or an epoxy resin (col 7, ln 7-21). An insulation or padding material can also be included among the explosion resistant sheet material (col 7, ln 54-58). It should be noted that the Examiner is equating

Art Unit: 1771

the insulation or padding material of Fingerhut et al. to the cushioning material required in the present invention. Fingerhut et al. disclose the claimed invention except for the teaching that the panel comprises a first and second fiber-reinforced face skin.

Dickson et al. disclose a ballistic armor laminate comprising a front face and a back face portion (col 2, ln 61-65) comprising a stack of phenolic prepregs of woven glass strands (col 2, ln 65-67 to col 3, ln 1). It would have been obvious to one having ordinary skill in the art to have used Dickson's front and back face stacks of phenolic prepregs of woven glass strands as the first and second face skins on the explosion resistant sheets of Fingerhut et al., motivated by the desire to create an explosion resistant material that absorbs and distributes or dissipates a substantial portion of the impact forces.

With regard to claims 2, 3, 5, 6, 9, 10, 11, 14, and 16, it should be noted that optimizing variables such as area density, rigidity, tensile strength, the number of fabric sheets, panel thickness, density, and face skin thickness are all result effective variables. For example, the higher the tensile strength of the panel, the greater the durability of the panel. The greater the panel and face skin thickness in the composite, the greater the ballistic resistance property of the panel. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the panel have an area density of not less than 1.8 pounds per square foot and not greater than 2.5 pounds per square foot, a panel rigidity of not less than a honeycomb-core structural panel of equivalent thickness, fabric tensile strength not less than 100 pounds per inch of width for every ounce per square yard of fabric weight, 12-33 sheets of the fabric layer, a panel

Art Unit: 1771

core that has a thickness of 0.25-2 inches, a cushioning material density of 3-8 pounds per cubic feet, and a first and second face thickness of 0.02-0.10 inches, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have optimized the panel's area density, rigidity, tensile strength, number of fabric sheets, panel thickness, density, and face skin thickness, motivated by the desire to create a ballistic panel that is lightweight yet has increased ballistic resistance.

With regard to claims 4 and 6, although the combination of Fingerhut et al. and Dickson et al. does not explicitly teach the claimed ballistic resistance, it is reasonable to presume that the ballistic resistance property is inherent to the explosion resistant material of Fingerhut et al. and Dickson et al. Support for said presumption is found in the use of like materials (i.e. high tensile strength fabric, film adhesive material, cushioning material, and first and second fiber-reinforced face skin material). The burden is upon Applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 495. In addition, the presently claimed property of a ballistic resistance not less than level IIIA as set forth in National Institute of Justice Standard 0101.04, would obviously have been present once the product of Fingerhut et al. and Dickson et al. is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Rejection is maintained.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fingerhut et al. (US 6,237,793) and Dickson et al. (US 5,851,932), as applied to claims 1-12 above,

Art Unit: 1771

and further in view of Bachner, Jr. (US 5,918,309). Fingerhut et al. and Dickson et al. disclose the claimed invention except for the teaching that the cushioning material comprises a polyurethane foam material.

Bachner, Jr. disclose a protective garment comprising woven sheets of high tensile strength fibers such as aramid, polyethylene, or PBO fibers (col 5, ln 62-63 and col 6, ln 3-17) and a thermoplastic polyurethane honeycomb cellular core (col 3, ln 39-40) surrounded by polyurethane film sheets (col 3, ln 63-65). It should be noted that the Examiner is equating the polyurethane honeycomb cellular core to the polyurethane foam material disclosed in the present invention. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used Bachner's polyurethane honeycomb cellular core in the explosion resistant material of Fingerhut et al. and Dickson et al., motivated by the desire to create an explosion resistant material that has increased protection against impact forces.

Rejection is maintained

9. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fingerhut et al. (US 6,237,793) and Dickson et al. (US 5,851,932), as applied to claims 1-12 above, and further in view of Dunbar (US 5,200,256) or Goerz, Jr. et al. (US 5,472,769). Fingerhut et al. and Dickson et al. disclose the claimed invention except for the teaching that the panel further comprises a stainless steel mesh cut-resistant layer.

Dunbar discloses a composite bulletproof panel comprising aramid or polyethylene fibers compression molded with a binder resin (col 4, ln 33-41). A stainless steel mesh is

Art Unit: 1771

positioned at the rear surface of the layer (col 4, ln 48-50). Goerz, Jr. et al. (US 5,472,769) disclose a soft body armor material with enhanced puncture resistance fabric from durable aramid fibers (abstract). An additional deflection layer can be made from a stainless steel mesh material (col 2, ln 24-30). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used either Dunbar's or Goerz, Jr's teaching of a stainless steel mesh layer in the explosion resistant material of Fingerhut et al. and Dickson et al., motivated by the desire to create an explosion resistant material with enhanced penetration resistance.

Rejection is maintained

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fingerhut et al. (US 6,237,793) and Dickson et al. (US 5,851,932), as applied to claims 1-12 and 14-16 above, and further in view Hollis, Sr. (US 3,969,563). Fingerhut et al. and Dickson et al. disclose the claimed invention except for the teaching that the panel further comprises at least one layer of gummy resin in the panel core.

Hollis, Sr. disclose a protective wall structure that has resistance to bullet impact (col 1, ln 23-27). Multi-layer cloth material is coated with microspheres in a binder of petroleum pitch (col 10, ln 56-67). It should be noted that the Examiner is equating Hollis' petroleum pitch coating to the gummy resin of the present invention. In Applicant's present specification, on page 9, lines 3-5, Applicant discloses that the gummy resin can be a petroleum-based pitch. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used Hollis' petroleum pitch coating

Art Unit: 1771

on the explosion resistant material of Fingerhut et al. and Dickson et al., motivated by the desire to create an explosion resistant material that has increased composite adhesion and enhanced resistance to penetration.

Rejection is maintained

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan (US 6,568,310), as applied to claim 1 above, and further in view Hollis, Sr. (US 3,969,563). Morgan discloses the claimed invention except for the teaching that the panel further comprises at least one layer of gummy resin in the panel core.

Hollis, Sr. disclose a protective wall structure that has resistance to bullet impact (col 1, ln 23-27). Multi-layer cloth material is coated with microspheres in a binder of petroleum pitch (col 10, ln 56-67. It should be noted that the Examiner is equating Hollis' petroleum pitch coating to the gummy resin of the present invention. In Applicant's present specification, on page 9, lines 3-5, Applicant discloses that the gummy resin can be a petroleum-based pitch. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used Hollis' petroleum pitch coating on the armored panel of Morgan., motivated by the desire to create a panel that has increased composite adhesion and enhanced resistance to penetration.

Response to Arguments

12. Applicant's arguments filed November 28, 2003 have been fully considered but they are not persuasive for the reasons set forth. Applicant argues that Fingerhut's cushioning material does not maintain the structural integrity of the rigid panel after a ballistic impact,

Art Unit: 1771

nor does it allow local deformation of the plurality of sheets of flexible high tensile strength fabric near the ballistic impact. Applicant also argues that Fingerhut discloses the use of flexible panels for the side walls of the explosion resistant container, thereby teaching away the use of a cushioning material as a structural element for maintaining the integrity of a rigid panel. These arguments are not persuasive because Applicant fails to specify the degree of rigidity required in the present invention. It is the Examiner's position that the explosion resistant container of Fingerhut has some degree of rigidity because only the side walls of the container are flexible. Therefore, the other sides of the container are more rigid.. Furthermore, it is well known in the ballistic protection industry to use cushioning materials to provide increased protection against impact forces. Also, cushioning materials are well suited to receive a blunt force and transmit it laterally away from the impact site and thereby distribute its effect over a broader area (Bachner, Jr. @ col 3, ln 41-43).

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee

Art Unit: 1771

pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action.

In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ula C Ruddock whose telephone number is 571-272-1481.

The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H. Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

UCR *UCR*

Ula Ruddock

Ula C. Ruddock
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